



EVALUATION OF A PROGRESSIVE UNIT-BASED RUNNING PROGRAM DURING ADVANCED INDIVIDUAL TRAINING

COL Valerie J. Berg Rice

CPT Vicki Connolly

LTC Annette Bergeron

Dr. Mary Z. Mays

CPT Greer M. Evans-Christopher

LTC Brian D. Allgood

SSG Shelia Mickelson

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<p>Over fifty percent of outpatient clinic visits at Fort Sam Houston are for musculoskeletal injuries. The purpose of this project was to examine high injury cause data, implement interventions, and evaluate their effectiveness in reducing musculoskeletal clinic visits and profiles. Two consecutive, ten-week 91B10 classes ($n = 175$ and 344 respectively) were tracked for unit reports of new and accumulated profiles, APFT scores, and Troop Medical Clinic reports of clinic visits and profiles. The first class conducted physical training using traditional methods (pre-RT). The second class used a running template (RT) emphasizing state-of-the-art knowledge on progressive training with a shorter initial running distance, a gradual buildup of distance, increased use of interval training, decreased use of distance runs, and strict adherence to the template. Results revealed fewer new profiles for the RT group (pre-RT = 43.11%, RT = 25.66%, $c^2 = 15.01$, $p < 0.01$) and fewer accumulated profiles. There was no difference between the two groups in terms of diagnostic and final APFT pass rates or scores ($p > 0.05$). Musculoskeletal clinic visits decreased by 36.5% (3.5 to 2.2 per 100 soldiers) representing a cost savings of \$1679 per week for one battalion. New musculoskeletal profiles were reduced by 48.6% (3.9 to 2.0 per 100 soldiers) representing a savings of 612 limited duty days per week for one battalion. The running template was successful in reducing musculoskeletal clinic visits and profiles while maintaining physical readiness. Similar programs are recommended for AIT sites across the Army.</p>			
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Operation Aegis – Injury Control

Department of Medical Science

U.S. Army Medical Department Center and School

Ft. Sam Houston

San Antonio, TX 78234-6000

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EXECUTIVE SUMMARY

Injuries are of epidemic proportion within the U.S. Army (Jones and Hansen, 1996). Operation Aegis, a task force developed under the tutelage of LTG Peake, conducted surveillance at Ft. Sam Houston (FSH) to identify the causes and risk factors associated musculoskeletal injuries. Early surveillance among soldiers in Advanced Individual Training at FSH revealed 56% of the visits to the Troop Medical Clinic are due to musculoskeletal injury (MSI) (Rice and Mays, unpublished data). According to the health care providers treating these soldiers, overuse injuries are the most common; 54 – 56% for men and 67 – 70% for women (187th and 232nd Medical Brigades respectively). For soldiers receiving profiles, overuse injuries represent an even greater proportion; 60-61% for men and 71-73% for women (187th and 232nd). Approximately 70% of the injuries are due to sprain, strain or pain of the lower extremity (Rice and Mays, unpublished data). During early surveillance, Advanced Individual Training (AIT) students reported the top three causes of their injuries as running (37%), marching (13%), and calisthenics (5%).

Several important items permitted the successful development of a targeted intervention plan. A solid base supporting injury prevention had been established with 232nd Battalion, operationally and in policies and procedures. The Commander and his staff had been involved with Operation Aegis, including the injury prevention process of identifying trends and methods to decrease injuries for nearly a year. The knowledge gained from the surveillance program, and from interactions with 232nd staff was

combined with information from extensive literature reviews to enable the development of a targeted intervention plan. Finally, the plan was reviewed by an informal consultation network on injury prevention that had been established by Operation Aegis. This network included individuals from the U.S. Army Physical Fitness School, Medical Research and Development Command, the Center for Health Promotion and Preventive Medicine, as well as the Center for Disease Control and the U.S. Naval Environmental Health Center.

The targeted activity selected for intervention was running and a running template was developed. The template emphasized state-of-the-art knowledge on progressive training with a shorter initial running distance, a gradual buildup of distance, increased use of interval training, decreased use of distance runs, and strict adherence to the template. Two consecutive, ten-week 91B10 classes were tracked for unit reports of new and accumulated profiles, APFT scores, and Troop Medical Clinic reports of clinic visits and profiles. The first class conducted physical training using traditional methods (pre-RT) (85 women and 90 men), while the second used the running template (RT) (148 women and 196 men). Both classes were from the same company to reduce the influence of different supervisors (commanders, drill sergeants, and cadre) and living conditions (housing, location, schedules). The RT group had older soldiers, more soldiers who felt stressed, and more soldiers who arrived for training with musculoskeletal symptoms that limited their daily activities ($p < 0.05$). Thus, the running template was evaluated with a group that was slightly “disadvantaged” compared with the pre-RT group.

Data Analysis included descriptive statistics and the Pearson chi-square statistic to examine the frequency data supplied in A Company EOC Reviews. Analyses of variance (ANOVA) were used to examine APFT results, with pairwise comparisons of means made using Tukey's test. Results revealed fewer new profiles for the RT group (pre-RT = 43%, RT = 26%, $\chi^2 = 15.01$, $p < 0.01$) and fewer for men (pre-RT = 29%, RT = 11%, $\chi^2 = 13.54$, $p < 0.01$). By mid-cycle there were less than half the accumulated profiles for the RT Group compared with the pre-RT group. By the end of the course, there were five times more accumulated profiles in the pre-RT group. There were no differences between the two groups in terms of diagnostic and final APFT pass rates, nor were there differences in APFT collective or individual event scores ($p > 0.05$). Musculoskeletal clinic visits decreased by 36.5% (3.5 to 2.2 per 100 soldiers), representing a cost savings of \$1679 per week for a single battalion. New musculoskeletal profiles were reduced by 48.6% (3.9 to 2.0 per 100 soldiers) representing a savings of 612 limited duty days per week for a single battalion.

The running template was successful in reducing musculoskeletal clinic visits and profiles while maintaining physical readiness. Implementation of similar programs in entry level training (BCT, AIT, OSUT) across the Army could save in excess of four million dollars. Greater savings could be realized using similar methods with permanent party soldiers. It is important to note that implementation of the template alone is not recommended. Setting the cultural and operational climate, joint involvement of medical subject matter experts and battalion staff in the process, and requiring company level accountability for injury levels are essential.

INTRODUCTION

In the fall of 1999, LTG James B. Peake assembled a task force to develop and implement a scientifically-based musculoskeletal injury prevention program for Center Brigade, U.S. Army Medical Department Center and School, Ft. Sam Houston, San Antonio, Texas. The resulting program, Operation Aegis – Injury Control, began in 2000.

Operation Aegis used a macroergonomic approach. In this approach each system, and each level within a system, were included in the analysis, design, intervention, and test and evaluation process. In order to design appropriate interventions, three types of analyses were conducted: an extensive literature review, a systems review, and injury surveillance. The literature review focused on musculoskeletal injury prevention, including military and civilian research. The systems review was an assessment of the contributions of all systems that could influence musculoskeletal injuries. Analysis of the systems used a “broad to a focused” approach progressing from Army-wide through Post, Brigade, Battalion, and Company levels. At each level, the analysis examined the influence of the organizational structure, resources, agencies, personnel, policies, procedures, surveillance systems and available data. Based on this systems analysis, positive and negative influences, barriers and enablers, as well as gaps were identified. Initially, Operation Aegis designed and implemented interventions that were global in nature, in an attempt to eliminate barriers to success and to fill in the gaps in information, process, and doctrine. Interventions focused on solutions that could become part of the

normal operating procedure of the unit. Several of the initial interventions were: 1) developing a command climate that viewed preventing injuries and enhancing performance as equally important, 2) developing battalion level Injury Control Advisory Councils to advise the commander on musculoskeletal injury (MSI) trends and to develop action plans to reduce injuries, 3) developing Battalion standard operating procedures (SOPs) for training which treated injury prevention and performance as equally important, 4) educating drill sergeants and cadre on the latest information on MSI prevention and physical performance enhancement, and 5) developing a reporting and accountability system for company commanders and first sergeants.

Army-wide medical surveillance systems and risk management systems were reviewed and used to identify global trends and areas of interest at Fort Sam Houston (FSH). However, these systems do not provide detailed data on risk factors, causes, or consequences of routine MSIs. Specific data on injuries and illnesses were not available to assist with the assessment of the types and causes of MSI's in Center Brigade in order to target interventions more accurately, therefore, a thorough surveillance system was designed and implemented. The surveillance surveys were completed by soldiers during in- and out-processing, during visits to the troop medical clinic (TMC), and subsequent to receiving a limited-duty profile. From this analysis, causes and types of injuries were identified, and targeted interventions were developed.

After six months of data collection, it was noted that over 50% of the TMC visits were for MSI's. This value was substantially larger than the 20% identified using the

1998 Defense Medical Epidemiology Database of the Defense Medical Surveillance System. Clearly, MSI's represented a significant expense for the TMC and for Center Brigade in terms of work hours and money. Early surveillance data revealed that 91% percent of the MSI's that resulted in the soldier receiving a profile occurred during duty hours. Soldiers reported the top three causes of their injuries as running (37%), marching (13%), and calisthenics (5%). Additionally, 43% of those MSI's were initially identified while the soldier was in Basic Combat Training (BCT) and 48% were first identified during Advanced Individual Training (AIT) at Ft. Sam Houston (FSH). This information directly conflicted with the perception of unit personnel; they perceived that soldiers were arriving injured and therefore, supervisory personnel assigned to Center Brigade at FSH could not influence the number of soldiers experiencing MSI's in their unit. The top five MSI's that soldiers reported upon arrival at FSH and the top five injuries seen in the TMC during AIT can be seen in Table 1. For men, lower leg moved from fifth to second place (BCT to AIT). For women, lower leg moved from third to first. "Lower leg" is a separate category from knee and ankle. Judging from interviews with providers "lower leg" is typically synonymous with "shin splints". In effect, for men and women in AIT at FSH, two out of every five MSI's were for knee and lower leg symptoms. Data also showed that 80% of soldiers coming into the TMC for a MSI received a limited duty profile and 50% of those receiving a profile, received one for longer than 7 days. According to the health care providers who evaluated and treated those injuries, 70% were for overuse injuries.

Based on this data, the following facts were evident: 1) about half of the MSI's experienced by student soldiers on FSH appeared to originate at FSH, 2) the majority of clinic visits and profiles for student soldiers at FSH were for lower extremity musculoskeletal injuries and overuse injuries, and 3) the number one cause of injuries at FSH appeared to be the running portion of the unit directed training. Armed with this information, the Battalion Commander and Operation Aegis personnel agreed to develop an intervention targeted at unit running.

Table 1. Top Five Injuries for First Four Months of Data Collection

Location of MSI	MSI's on Arrival at AIT % (rating 1-5)		MSI's during AIT % (rating 1-5)	
	Men n = 587	Women n = 687	Men n = 465	Women n = 548
Knee	18 (1)	19 (1)	22 (1)	20 (2)
Foot/Toe	16 (2)	15 (2)	15 (3)	15 (3)
Ankle	11 (3)	9 (4)	12 (4)	9
Lower Leg	7 (5)	10 (3)	18 (2)	26 (1)
Back	9 (4)	6	11 (5)	10 (5)
Hip/Pelvis	2	7 (5)	4	11 (4)

BACKGROUND AND LITERATURE REVIEW

U. S. Army Training

Physical training conducted by the U.S. Army is rigorous so that physical fitness is developed and maintained, and the physical skills required during combat are honed. However, intense physical training can result in injuries; especially overuse musculoskeletal injuries (Cowan, et al., 1988; Jones, et al., 1988; Linenger, Finn, Thomas, and Johnson, 1993; Shaffer, et al., 1994). Clearly, a program that used the best information available from both civilian and military sports and physical training literature focused on reducing injuries, without sacrificing performance, would benefit soldiers. Such a program could potentially enhance training effectiveness, save healthcare expenses, reduce lost duty time due to temporary disability, and educate leaders and soldiers.

Army physical training is intended to build physically fit soldiers that are able to accomplish their wartime mission under adverse conditions. To this end, most Army units perform physical training from 3-5 days per week, spending about one hour on each session. Physical training schedules are generally devised at the Company or Battalion level based on guidance from higher headquarters, the U. S. Army Physical Fitness School (USAPFS) and Field Manual (FM) 21-20. Traditional doctrine from the USAPFS recommends a balanced physical training program that addresses cardio-respiratory endurance, muscle strength, muscular endurance and flexibility. Newer doctrine includes balance, coordination and agility (Draft FM 3-25.20; FM 21-20). In order to build total-

body fitness and ensure soldiers have the physical skills, power, and stamina needed to perform their mission essential tasks, the USAPFS stresses the need for a well-rounded program that does not overemphasize a specific activity. Nonetheless, many units devote the bulk of their physical training time to distance running of two miles or more, rather than interspersing speed drills, interval training, and agility drills. This practice produces improvements in cardio-respiratory endurance but also may contribute to high rates of musculoskeletal injury. Overuse injuries of the lower extremities are common among military and civilian runners alike (Blair, 1987; Bovens, 1989; Jacobs and Berson, 1986; Koplan et al., 1982; Lysholm and Wiklander, 1987; Macera, 1989; Marti, 1988; Rudzki, 1997; Walter et al., 1989), with reported rates ranging from 24 to 85 percent. The wide spread in reported rates appears to be the result of inconsistent definitions of injury, as well as differences in study populations (i.e., groups of elite runners versus groups with novice and seasoned runners).

Risk Factors

Two risk factors that frequently correlate with increased injury risk are increasing distance run per week (Alameida et al., 1997; Blair and Kohl, 1987; Bovens et al., 1989; Jacobs and Berson, 1986; Jones et al., 1993; Koplan et al., 1982; Lysholm and Wiklander, 1987; Macera et al., 1989; Walter et al., 1989) and low levels of fitness (Alameida et al., 1999; Jones et al., 1993; Macera et al., 1989; Marti et al., 1988). Army basic trainees, many of whom are novice runners at the start of Basic Combat Training (BCT), frequently sustain musculoskeletal injuries. Researchers evaluating the incidence

of injuries among U.S. basic combat trainees report injury rates of 23-37% for males and 42-67% for females (Canham-Chervak et al., 2000). Running is generally believed to be a causal factor in the majority of these injuries with increased amounts of running resulting in higher injury rates (Alameida et al., 1997; Jones et al., 1993; Rudzki, 1997). As in most Army units, the amount of running performed by BCT units is not strictly prescribed and regulated, but usually left up to the discretion of the individual Company Commander and his or her staff. Lack of strict guidelines allows for training errors. Requirements for adherence to guidelines developed by subject matter experts would also curtail unintentional training errors, due to commanders' lack of knowledge of appropriate running progression. These errors include progressing too quickly and not allowing for sufficient recovery periods between running sessions through activities of lower impact.

U.S. Army Performance Requirements During Basic Combat Training

The Army Physical Fitness Test (APFT) consists of timed sets of push-ups and sit-ups, as well as a two-mile run. Soldiers are required to achieve a minimum of 50 points on each event prior to graduation from BCT. Officers and Non-Commissioned Officers (NCOs) frequently express the belief that in order to achieve high (or even passing) scores on the two-mile run, one must routinely run in excess of two miles, 4 to 5 days per week. Recently, however, experts at the USAPFS, medical professionals and researchers have questioned the validity of this approach. Research has shown that performance standards on run-based tests of two and even three miles can be achieved

with less distance running (Alameida et al., 1997; Jones et al., 1993; Rudzki, 1997). Jones et al. (1993) compared two groups of male, U.S. Army Infantry trainees. One group of trainees ran a total of 130 miles and marched 68 miles over 12 weeks of training while the other group ran a total of 56 miles and marched 121 miles. Both units completed their final APFT, two-mile run on the same track. The average run time among the group of soldiers that ran 130 miles was 13.48 minutes while the average for the group that ran 56 miles was 13.75 minutes. These minimal gains in performance came at a price. The soldiers in the high mileage run group were 1.27 times more likely to be injured than those in the low running mileage group. These injuries result in significant costs in terms of health care and disability dollars spent, limited or lost duty-time and overall mission success and unit readiness.

Combat Medic Advanced Individual Training

U.S Army Medical Specialists receive their Military Occupational Specialty (MOS) AIT at FSH, TX in the 232nd Medical Battalion. Most soldiers begin this training directly upon graduation from BCT. Surveillance data shows that, upon arrival, 57% of the trainees who report they sustained an injury during BCT also report experiencing symptoms that interfere with their duty performance involving muscle, joint or bone pain, soreness or stiffness. This rate is over twice the 20% rate of trainees that do not report experiencing an injury during BCT (Rice and Mays 2001, unpublished data). Henderson, et al.. (2000) conducted a medical record review to describe musculoskeletal injuries among trainees at FSH (Henderson, Knapik, Shaffer, McKenzie, and Schneider, 2000).

They reported the injury incidence among trainees as 24% for men and 30% for women, with overuse and lower extremity injuries accounting for the largest proportion by diagnosis and anatomical location. This data was confirmed through self-reports by Rice and her colleagues who found the rates to be 24% for men and 24% for women, also with overuse and lower extremity injuries accounting for the largest proportion by diagnosis and anatomical location (Rice, Mays, and Connolly, 2001). Approximately four of every five soldiers seen for a musculoskeletal injury at FSH receive a profile (prescribed duty limitations recommended by a medical officer due to an illness or injury) and seven of ten musculoskeletal profiles are written for overuse injuries (Rice, Mays, Bergeron, Connolly, Mickelson, King, and Lee, 2001).

AIT soldiers at FSH must also pass the APFT at the Army standard of 60 points in each of the three events prior to graduation. Depending upon their prescribed limitations, soldiers on profile at the time of the APFT may or may not be able to take the test. If a soldier is unable to take the APFT due to a profile, they are subject to being retained until such time as they are able to take and pass the test. Soldiers may be granted authorization to test with an alternate event when they are on continuous profile for greater than 60 days for the same injury. They may be given a waiver if they passed the APFT to the 60 point standard previously during Individual Entry Training and they are expected to fully recover from their current ailment. Waivers are granted on an individual basis and outcomes may vary based on individual circumstances.

Due to the significant rate of injury among trainees and the correlation between overuse injuries and running distance, in March 2001, the 232nd Medical Battalion Commander agreed to test the use of a controlled running template. The running template was based on a literature review, subject matter expert recommendations, and the 91B10 course length. The commander's goal was to reduce the incidence of injury without decreasing the pass rate on the APFT, thus maximally preparing soldiers to immediately integrate and contribute to their gaining unit.

METHODS

Subjects

Data for the study was taken from existing administrative databases maintained on members of the January 2001 class and the April 2001 class of Basic Medical Specialists assigned to Company A of the 232nd Medical Battalion. The January 2001 class was the last class before a running template (RT) was developed and so was designated the "pre-RT group." The April 2001 class was the first class that used a running template and so was designated the "RT group." This "before and after" design was used to reduce the influence of different supervisors (commanders, drill sergeants, and cadre) and living conditions (housing, location, schedules). There were 175 soldiers in the pre-RT group (85 women and 90 men) and 344 soldiers in the RT group (148 women and 196 men). Because data from a variety of sources were used to assess multiple outcomes, the sample size varies with individual analyses (due to the nature of the data, the data collection method, or the timing of the data collection). Soldiers in

Company A were asked to complete a demographic and injury history questionnaire at in-processing as a part of a larger medical surveillance program. The demographics of this sample of survey volunteers are shown in Table 2 (surveillance data). There were some areas in which the two samples were significantly different. The RT group had older soldiers, more soldiers who felt stressed, and more soldiers who arrived for training with musculoskeletal symptoms that limited their daily activities. While not a worst-case scenario, the RT program was tested in a group of soldiers who started training at a disadvantage compared to the pre-RT group. Thus, the study design was a conservative test of the benefits of the RT program.

Table 2. Demographics of Samples of Pre-RT and RT Groups

	Pre-RT Group (n = 108)	RT Group (n = 173)	p value of the Chi Square Test
Ethnicity			p > 0.05
White	50%	56%	
Black	20%	16%	
Hispanic	23%	19%	
Other	7%	9%	
Age			p < 0.01
17-19 years	44%	27%	
20-24 years	39%	57%	
25-29 years	9%	10%	
30-34 years	8%	6%	
Body Mass Index			p > 0.05
Healthy/Underweight	72	66	
Overweight/Obese	28	34	
Status			p > 0.05
Active Duty	63%	71%	
Guard/Reserve	37%	29%	

	Pre-RT	RT	p Value
Physical Fitness			p > 0.05
Poor/Fair	29%	24%	
Good	52%	47%	
Very Good/Excellent	19%	29%	
Level of Stress			p < 0.001
None/Low	48%	26%	
Moderate	44%	39%	
High/Very High	8%	35%	
Smoked Last Month			p > 0.05
Never/Once	92%	96%	
1-3 Days per Week	4%	2%	
Daily	4%	2%	
Injured in BCT			p > 0.05
Yes	39%	46%	
No	61%	54%	
Current Symptoms that Interfere			p = 0.05
Never	72%	57%	
Some of the Time	22%	32%	
Most/All of the Time	6%	11%	

Procedures

As previously noted, comparison measurements were made on soldiers in two consecutive AIT training cycles for the same company. Using the same company controlled for the impact of differing leadership. A training cycle consists of a ten-week course, which begins three to fourteen days after BCT completion. Between BCT and AIT, there is approximately a two to three week break from organized physical training. This is due to the increased activity during field training at the end of BCT, administrative out-processing from the basic training post, travel to the AIT post, administrative in-processing, and sometimes entailing a brief wait until the beginning of an AIT class. Organized physical training at AIT begins as soon as there are 20 soldiers in the company. During AIT, physical training is conducted for one hour on Monday, Tuesday, Wednesday, and Friday mornings. A diagnostic APFT is given between the first 10 to 14 days of AIT. A second diagnostic APFT is given mid-cycle, and the final or record APFT is given during the eighth week of training. Soldiers participate in a six mile road march during training week ten. For all AIT soldiers, their primary duties are to attend class and most of their day is spent in didactic training.

The primary differences in the training schedule for the RT and pre-RT groups were the initial running distance, the gradual buildup of distance, increased use of interval training, decreased use of distance runs, and strict adherence to the template. Both the pre-RT and RT groups interspersed days of rest between training events that emphasized one body part (such as marching and running) to prevent overuse injuries

(Appendix 1). Both groups also implemented loose formations without cadences to allow individual stride length.

Pre-RT Group. No briefing was given to the command staff (battalion commander, battalion executive office, battalion staff, company commander, company executive officer, non-commissioned officers, or drill sergeants) regarding the project prior to the January (pre-run template) class. However, subject matter experts from Operation Aegis evaluated battalion training schedules and processes and made suggestions for altering training to reduce overuse injuries during May of 1999 (six month prior to this intervention). Selected battalion NCOs attended a one-week class given by the U.S. Army Physical Fitness School, so they could incorporate new information on physical training into their existing program during September/October 1999. A new standard operating procedure (SOP) incorporating suggestions from Operation Aegis and USAPFS staff had been developed during the prior three months. The SOP was implemented one training cycle prior to its' use with the pre-RT class. Thus, the pre-RT traditional training program followed what the leadership thought was the best program they could offer.

A physical training schedule was developed by the drill sergeants, first sergeant and company commander. Physical training was conducted four mornings per week. Each session included calisthenics with a focus toward muscle failure for abdominal and upper body strength on two of those sessions (Tuesday and Friday). Three of the four sessions included a run (Monday, Wednesday and Friday). The run was a progression from 2.3 to 3.5 miles based on time intervals progressing from 20 to 30 minutes. As

such, it was common for the “faster” ability groups to routinely run distances of up to 4 miles.

The pre-RT group ran a route known as “the loop” every Monday, Wednesday and Friday. This route was approximately 2.7 miles long, and consisted of a running on a paved road. The road was located in a convenient loop, close to the barracks and track area in which standard physical training calisthenics were conducted. Distances run varied from company to company within the battalion, with some companies running distances of 4-5 miles more frequently than others. It was standard practice within the battalion to run distances of 3-4 miles, on occasion, to mark the completion of training phases or other significant training events. The pre-RT group performed either hill runs or speed training one time per week. They ran in six ability groups and soldiers were placed in the groups based on their most recent APFT 2-mile run time. Typically, during their 10-week cycle, the pre-RT class ran in a company formation for two motivational runs during the class, with the first run distance being 2.5 miles and the second 3.0 miles.

RT Group. A running template was developed by subject matter experts in Operation Aegis, in consultation with staff at the USAPFS (Appendix 1). The template followed basic principles of gradual progression and allowing for recovery. Special consideration was given to conditions existing at FSH, such as the physical running environment (road configuration) on which soldiers would run, the 10-week schedule for AIT, and the amount of time between completion of BCT and beginning physical training at AIT at FSH. Under the template, soldiers ran no more than three times per week. Running

distance for new students started at 1.5 miles and increased gradually up to 2.7 miles over the ten-week course (Appendix 1). The initial distance of 1.5 miles was selected because soldiers in BCT trained to a minimum standard of 2-miles, and may not have reached this distance during a comfortable run until late in their training cycle. As mentioned in a previous section, soldiers do not participate in physical training runs during the final 1 ½ to 2 weeks of BCT due to field training, graduation, and out-processing. Soldiers participate in a road march in the final two weeks. In-processing at AIT can take a few days, and some soldiers arrive before the training cycle is ready to begin, which may necessitate their waiting a few days to a week or more before classes begin. As soon as 20 soldiers have reported into a company in AIT, their Drill Sergeant begins taking them to the track to run at their own pace and distance for 15-20 minutes. In essence, the range of non-running time between BCT and AIT is between 2 and 3 ½ weeks. Even this brief hiatus dictates that soldiers should decrease their distance and speeds for their first runs in AIT, and gradually increase to their previous level. Their previous level should be defined by the speed and distance that they ran on a regular basis. Therefore, if they had worked up to being able to accomplish a 2-mile run during BCT, but were not running 2 miles on a regular basis, then this was not their ‘previous level’. Interval training was incorporated once weekly starting in the fourth week of training. No unscheduled increases in distance or speed were allowed. The RT group adhered to the run template and ran in seven ability groups with run-time spreads of 1.5 - 2 minutes. Soldiers used their own stride length and no cadence runs were included, except for a single Brigade run. When the Brigade run was conducted, groups using the running template were to join the larger formation at a point that would permit them to run the distance dictated by

the running template weeks schedule and they ran in cadence. A Company was already at the 2.7 mark when the Brigade run occurred, so they participated fully in the run.

Dependent Measures

This report uses data collected by A Company as part of their end-of-cycle (EOC) review, data collected at the troop medical clinic (TMC), and APFT scores recorded on individual scorecards. Data collected in the unit focused on new and accumulated profiles. TMC data documented clinic visits and profile limited duty days for MSI's. Physical performance was measured by the APFT (Army, 1990; Knapik, 1989; Knapik, et. al, 1994).

Company EOC reviews incorporated frequency data on new and accumulated musculoskeletal injury profiles, and the number of students on profile at the time of the diagnostic and final APFT. TMC surveillance data was collected as part of a larger surveillance effort and participation in the survey was voluntary. It was expected that this additional data source would either substantiate or contradict the trends seen by the EOC reviews conducted by A Company. The survey data included clinic visits and profiles for musculoskeletal injuries.

Diagnostic and final APFT scores were recorded on the soldier's Physical Fitness Test Scorecard (DA Form 705) and subsequently put into a database for analysis. The APFT consists of three events: push-ups, sit-ups, and a 2-mile run. Non-commissioned

officers (NCOs), who were trained on the standardized test procedures, administered the APFT. Both groups took the diagnostic APFT within 8-14 days after arriving at FSH and a record APFT in the 8th week of training. Compliance on this measure was 100% as it was part of normal operations in maintaining unit accountability.

Data Analysis

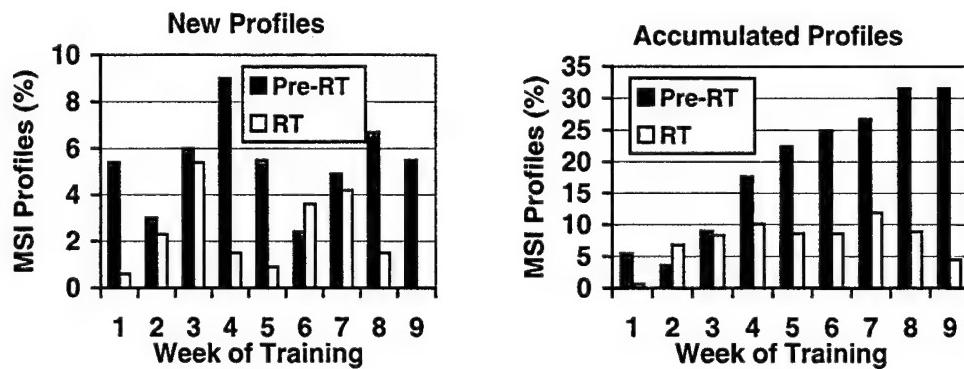
Descriptive statistics and the Pearson chi-square statistic were used to examine the frequency data supplied in A Company EOC Reviews. Analyses of variance (ANOVA) were used to examine APFT results, with pair wise comparisons of means made using Tukey's test. The Statistical Package for the Social Sciences (SPSS), Version 10.1 was used for analysis. An alpha level of 0.05 was used to judge statistical significance.

RESULTS

Company EOC Review. Profiles

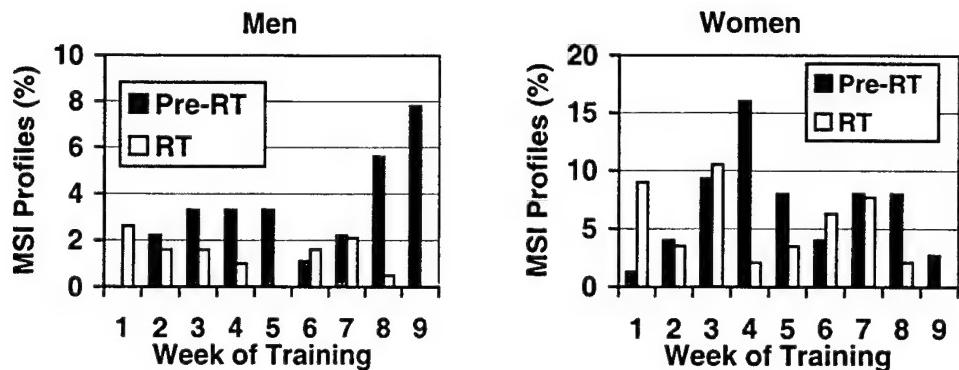
Two of the goals of the RT program were to reduce the number of MSI's and the number of MSI profiles. A decrease in the number of musculoskeletal profiles would suggest the first goal was also met. The End of Cycle Review information on new and accumulated musculoskeletal profiles can be seen in Figures 1 and 2. New profiles were lower for the RT group during each week of training, except for week six. Overall, new profiles were lower for the RT group ($\text{pre-RT} = 43\%$, $\text{RT} = 26\%$, $\chi^2 = 15$, $p < 0.01$).

Accumulated profiles were significantly lower for the RT group for each week, excluding the second and third weeks ($p < 0.01$). As weeks passed, the differences between the RT and pre-RT groups grew substantially, from 5 to 27%.



Figures 1 and 2. New and Accumulated Profiles for A Co. 232

Figures 3 and 4 depict the EOC report on new profile data for men and women. New profiles for men in the RT group were lower than for the pre-RT group for every week, except weeks one and six. Overall, the number of new musculoskeletal profiles identified for men in the RT group was lower than for men in the pre-RT group (Table 3). There were fewer new profiles for women in the RT group during 6 of the 9 weeks. Although among women there were fewer new profiles overall received in the RT group than in the pre-RT group, the difference was not significant (Table 3). Overall a 40% reduction in new profiles was achieved when using the RT.



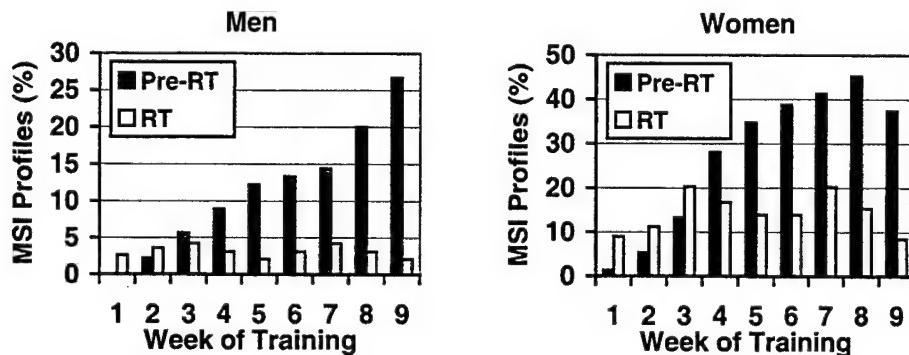
Figures 3 and 4. A Co. 232 New Profiles for Men and Women

Table 3. Rate of New Profiles Before and After Running Template Program

	Pre-RT Group Rate of New Profiles (n = 175)	RT Group Rate of New Profiles (n = 344)	Change in Rate	Percentage Reduction in Rate	P Value of Chi Square Test
Men	29%	11%	-18%	-62%	p < 0.01
Women	54%	45%	-9%	-17%	p > 0.05
Total	43%	26%	-17%	-40%	p < 0.01

Figures 5 and 6 show accumulated profile data for men and women. During the first two weeks, the individuals in the RT group had a greater percentage of accumulated profiles than the pre-RT group. During the third week for men and the fourth week for women, this trend reversed showing fewer accumulated profiles for men and women.

during the final 6 weeks of AIT. The differences were statistically significant for weeks 5 – 9 for men and women ($p < 0.01$).



Figures 5 and 6. A Co. 232 Accumulated Profiles for Men and Women.

Company Data. Diagnostic and Record APFT

The third goal of the RT program was to maintain the physical fitness performance of soldiers while decreasing the number of injuries. Maintaining pass rates on the DAPFT and RAPFT and decreasing the number of soldiers unable to take the APFT due to being on profile would suggest that this goal was met. The APFT pass rate data is summarized in Table 4 and the APFT profile rates are summarized in Table 5. Table 4 shows that soldiers in the RT group passed the APFT's at higher rates, although the differences were not statistically significant. Table 5 shows that soldiers in the RT group had fewer profiles, although the differences were not statistically significant.

Diagnostic and record APFT data were analyzed immediately following the APFT administration. As a result, a soldier failing the initial administration of the APFT, but

passing the APFT retake, was recorded as a failure. However, results including retakes showed the same overall pattern. After retakes of the DAPFT, 69% of the pre-RT group passed, compared with 78% in the RT group, while the percent on profile did not change. After retakes of the RAPFT, the percent passing was 87% compared with 88% (pre-RT to RT), and the percent on profile was 30% for the pre-RT group, compared with 15% for the RT group.

Table 4. APFT Pass Rates Before and After Running Template Program

	Pre-RT Group Pass Rates (number tested)	RT Group Pass Rates (number tested)	P Value of Chi Square Test
Diagnostic APFT			
Men	74% (73)	85% (174)	p > 0.05
Women	64% (66)	67% (113)	p > 0.05
Total	69% (139)	77% (287)	p > 0.05
Record APFT			
Men	91% (67)	94% (159)	p > 0.05
Women	81% (48)	83% (93)	p > 0.05
Total	87% (115)	90% (252)	p > 0.05

Table 5. APFT Profile Rates Before and After Running Template Program

	Pre-RT Group On Profile (number/group)	RT Group On Profile (number/group)	P Value of Chi Square Test
Diagnostic APFT			
Men	16% (87)	9% (191)	p > 0.05
Women	22% (85)	23% (146)	p > 0.05
Total	19% (172)	15% (337)	p > 0.05
Record APFT			
Men	21% (85)	15% (186)	p > 0.05
Women	39% (79)	34% (140)	p > 0.05
Total	28% (164)	21% (326)	p > 0.05

Company Data. APFT Scorecards

Analysis of soldiers' actual scores on the RAPFT is another way of measuring whether the goal of maintaining physical fitness performance was met. A 2 x 2 (Group x Gender) ANOVA was used to evaluate differences between the pre-RT and RT groups' scores on the RAPFT. Total scores on the RAPFT and scores on each component of the RAPFT were analyzed.

Total Scores. As shown in the Figure 7, differences between the groups were negligible ($F(1,363) = 2.31, p > 0.10$), as were the differences between genders ($F(1,363) = 1.05, p > 0.10$). Although men in the RT group performed slightly better than women, the interaction of group and gender was not statistically significant ($F(1,363) < 1, p > 0.10$). The average performance of soldiers in the RT group was equivalent to that of the pre-RT group during the RAPFT.

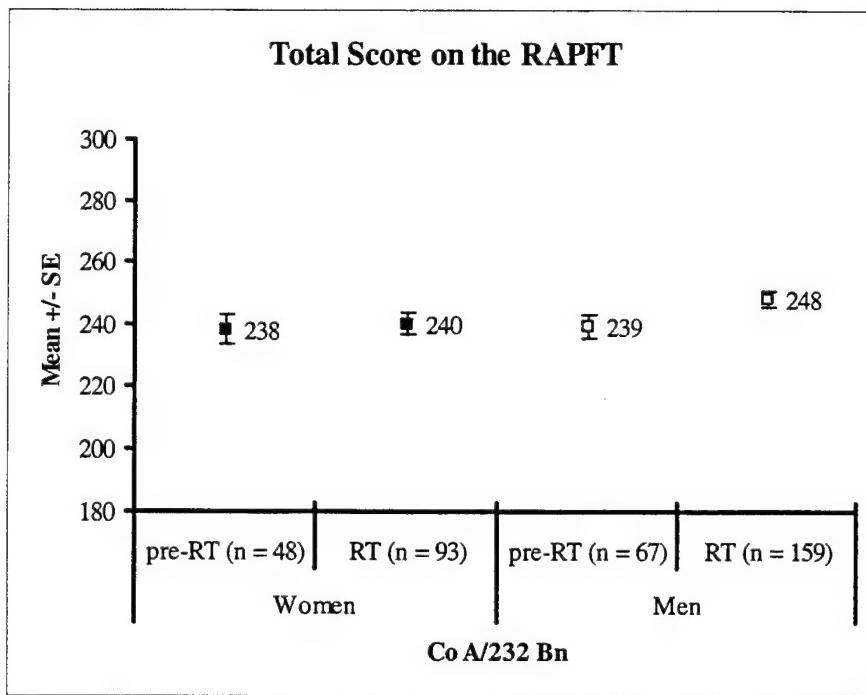


Figure 7

Run Scores. As shown in Figure 8, there was no overall difference between the pre-RT and RT groups ($p > 0.10$) on run scores on the RAPFT, nor were the interaction of groups and gender significant ($p > 0.10$). The effect of gender was marginally significant, because men had slightly higher scores than women ($F(1,363) = 3.64, p =$

0.06). Soldiers in the RT group scored as well as those in the pre-RT group on the running component of the physical fitness test.

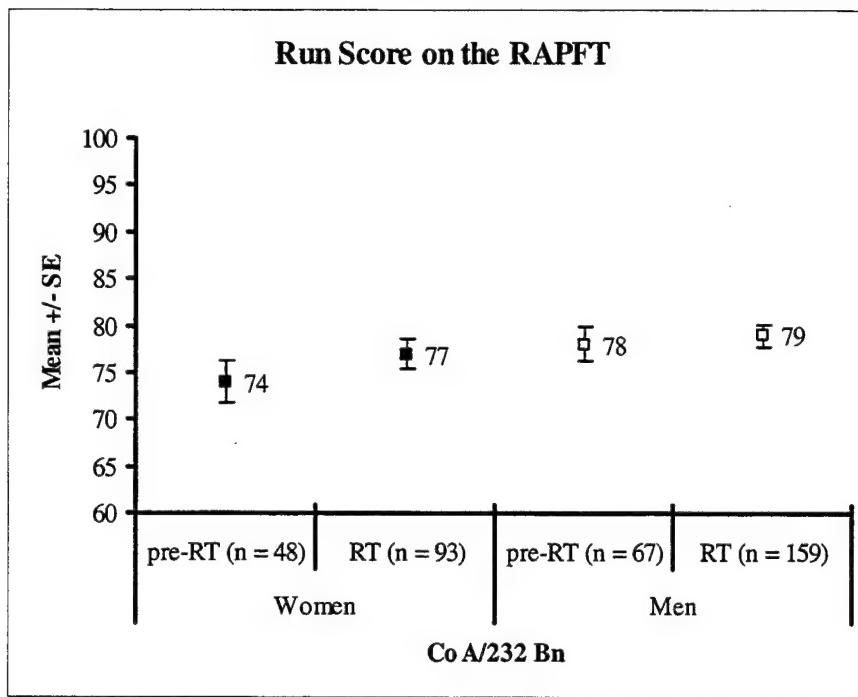


Figure 8

Sit-up Scores. Results of the analysis of scores on the sit-up component of the RAPFT can be seen in Figure 9. There was no overall difference between the pre-RT and RT groups ($p > 0.10$), nor was there an overall difference between genders ($p > 0.10$). The interaction of groups and gender was marginally significant, because the sit-up scores of the men in the running template group were higher than those of the other groups, $F(1,363) = 4.03$, $p = 0.05$. Soldiers in the RT group scored as well as those in the pre-RT group on the sit-up component of the physical fitness test.

Pushup Scores. There were no significant differences in group, gender, nor their interaction, on the push-up component of the RAPFT ($p > 0.10$, Figure 10). Soldiers in the RT group scored as well as those in the pre-RT group on the pushup component of the physical fitness test.

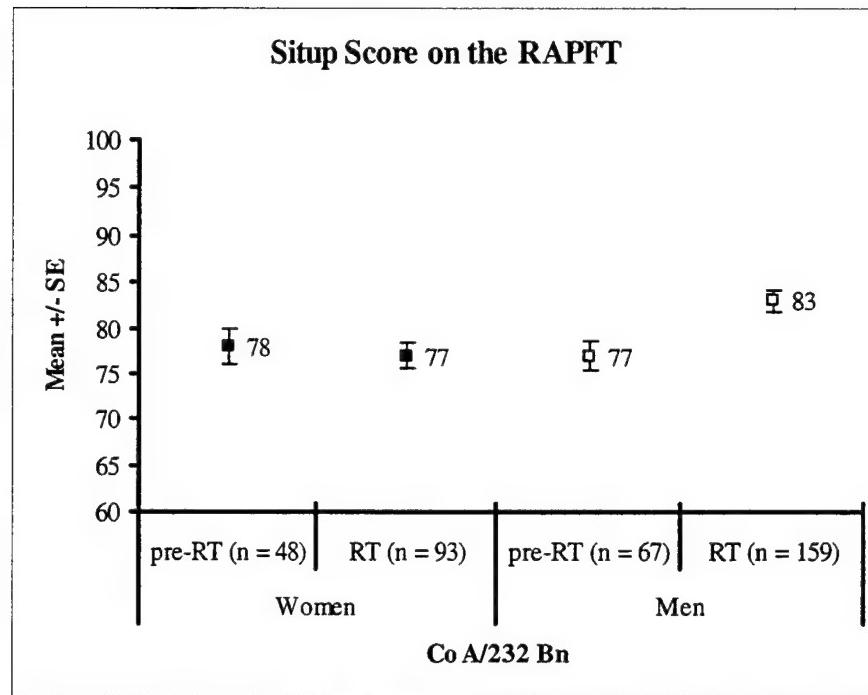


Figure 9

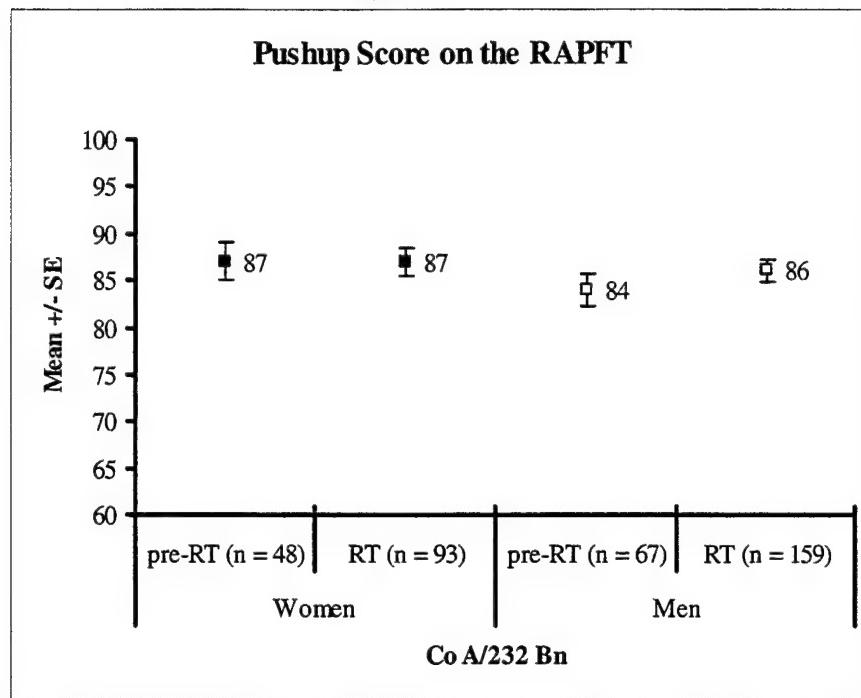


Figure 10

Change Scores. Although only a subset of any class takes both the DAPFT and RAPFT, it is important to compare the pre RT and RT groups in terms of the degree to which individual performance improved during training. This comparison evaluates whether the running template is sufficiently challenging to insure that soldiers improve their performance. In the pre-RT group 100 of 175 soldiers (57%) took both tests, while in the RT group 219 of 344 soldiers (64%) took both tests ($\chi^2 = 2.08$, $p = 0.15$). For this analysis, the difference between the RAPFT score and the DAPFT score was used as a measure of improvement. Scores on this measure ranged from a loss of 87 points to a gain of 67 points, with 25% of soldiers losing one or more points, 8% of soldiers showing no change, and 67% of soldiers gaining points. Given the range of scores on this

measure, the soldier's were divided into "ability" groups on the basis of their DAPFT scores. Soldiers scoring 226 or higher were placed in the "high score group," while those scoring less than 226 were placed in the "low score group." Figure 11 shows the results for men and Figure 12 shows the results for women.

Men in the low score group in the pre-RT group improved their scores by an average of 20 points, while those in the high score group in the pre-RT group improved their scores by an average of 5 points. In contrast, men in the low score group in the RT group improved their scores on average by 16 points, while those in the high score group in the RT group improved their scores by an average of 6 points. Thus, it appears that the pre-RT and RT programs were equally challenging to men in the high scoring groups, but the RT program was slightly less challenging to men in the low scoring group.

As shown in Figure 11, women in the low score group in the pre-RT group improved their scores by an average of 18 points, while those in the high score group in the pre-RT group improved their scores by an average of 5 points. In contrast, women in the low score group in the RT group improved their scores on average by 10 points, while those in the high score group in the RT group improved their scores by an average of 1 point. Apparently, the RT program was slightly less challenging for women regardless of their scoring group.

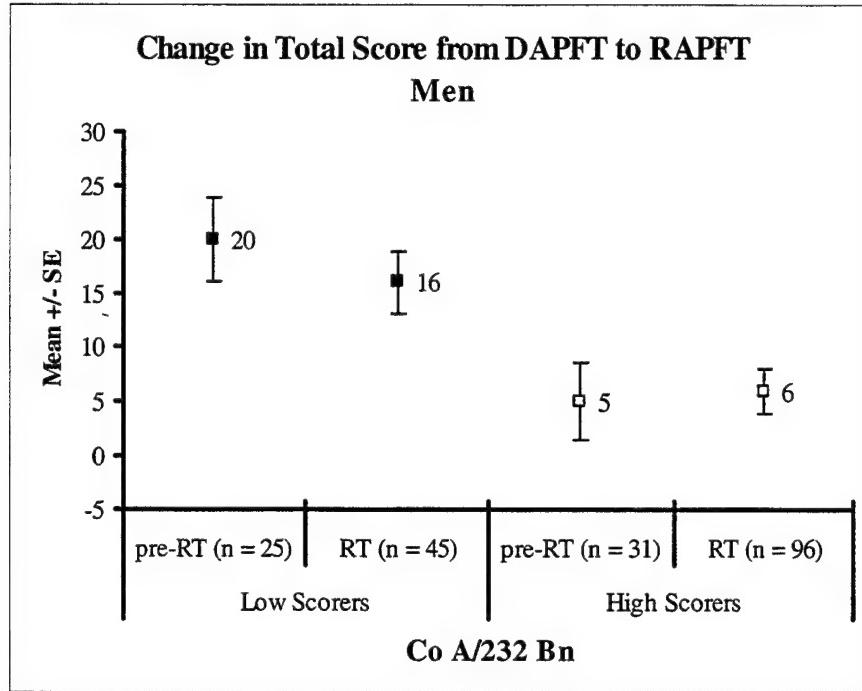


Figure 11

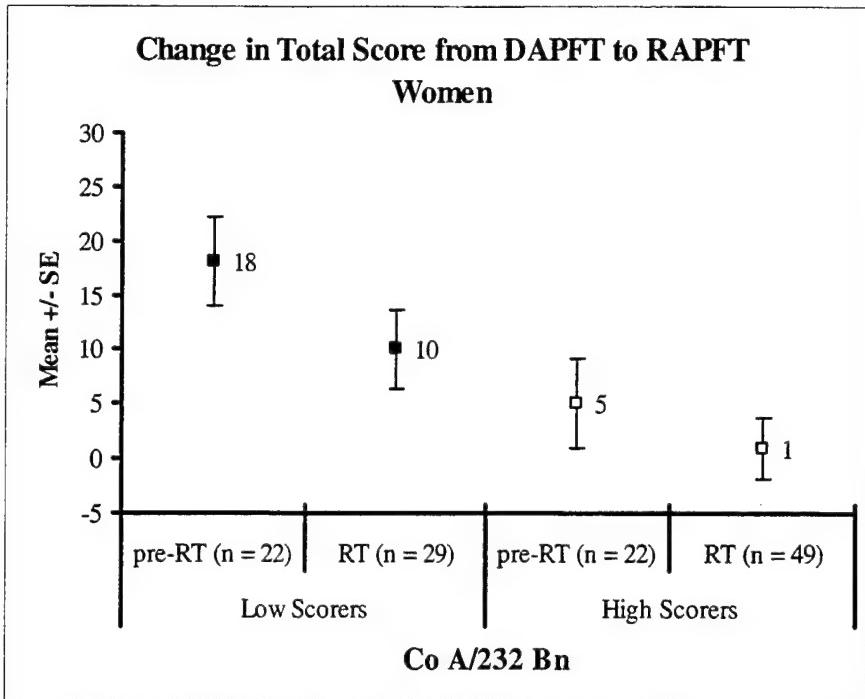


Figure 12

This data was analyzed using a $2 \times 2 \times 2$ (Group x Ability Group x Gender) ANOVA. Neither the effect of group (pre-RT vs. RT), nor the effect of gender was statistically significant, $F(1,311) < 1$, $p > 0.10$. Soldiers in the low ability group improved significantly more on the RAPFT than those in the high ability group did, $F(1,311) = 23.46$, $p < 0.001$. The highest order interaction effect, the interaction of group with ability group with gender, was also statistically significant, $F(1,311) = 3.84$, $p = 0.01$. Pair wise comparisons of means were made using Tukey's test. As shown in the Figures 8 and 9, (a) men improved slightly more than women, (b) the pre-RT group improved slightly more than the running template group, (c) the low score groups improved significantly more than high score groups, and finally, (d) the men in the high score groups showed the same degree of improvement, regardless of whether they trained in the pre-RT or RT program.

Company Data. Holdovers and Waiver Requests

Six percent of the pre-RT group was held over due to RAPFT failure, while 2% were held over for medical reasons. Five percent of soldiers in the RT group were held over due to their failing the RAPFT and 3% were held over due to medical reasons. Requests for RAPFT Waivers were received for 13% of the soldiers in the pre-RT group, compared with 7% of the RT group.

Surveillance Data

Figure 13 shows the comparison of clinic visit rates for the pre-RT group and the RT group. The pre-RT group had an average rate of 3.5 clinic visits for musculoskeletal complaints per 100 soldiers. Based on 300 soldiers in six courses, this rate represents 63 clinic visits per week for the battalion. The average rate for the RT group was 2.2 per 100 soldiers, representing 40 clinic visits per week. Thus, the rate of clinic visits was reduced by 36.5%. This data supports the End of Cycle Review data and confirms that the RT program reduced the number of injuries. The average cost for a primary care clinic visit at Brooke Army Medical Center for January – October 2001 was \$73 (MEPRS for BHA). The reduction of 23 visits represents a cost savings of \$1679 per week for the battalion.

Figure 14 provides a comparison of new profiles for the pre-RT and RT groups using clinic survey data. The pre-RT group had an average of 3.9 profiles for

musculoskeletal injury per 100 soldiers per week. This rate represents 70 profiles per week from the battalion. The profile rate decreased to 2.0 profiles per 100 soldiers per week during the RT program; i.e. 36 profiles per week from the battalion, a reduction in the profile rate of 48.6%. With an average profile length of 18 days, a reduction of 34 profiles represents a savings of 612 limited duty days per week for the battalion. This data also supports the End of Cycle Review data.

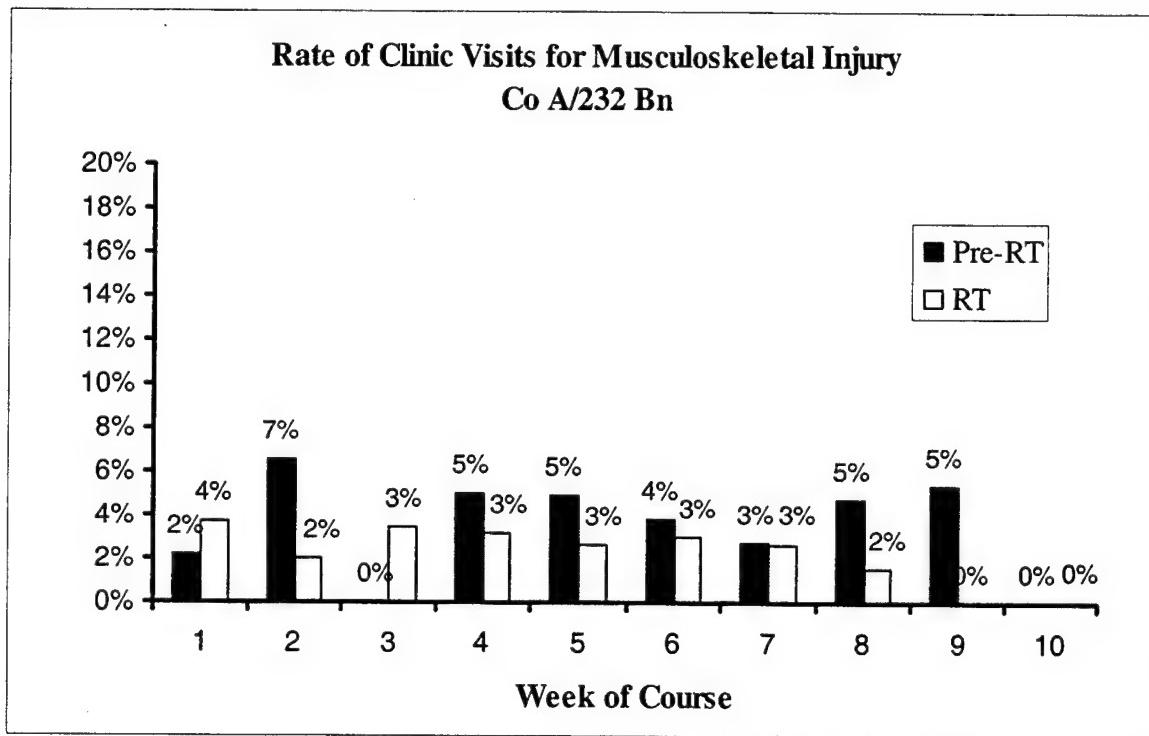


Figure 13

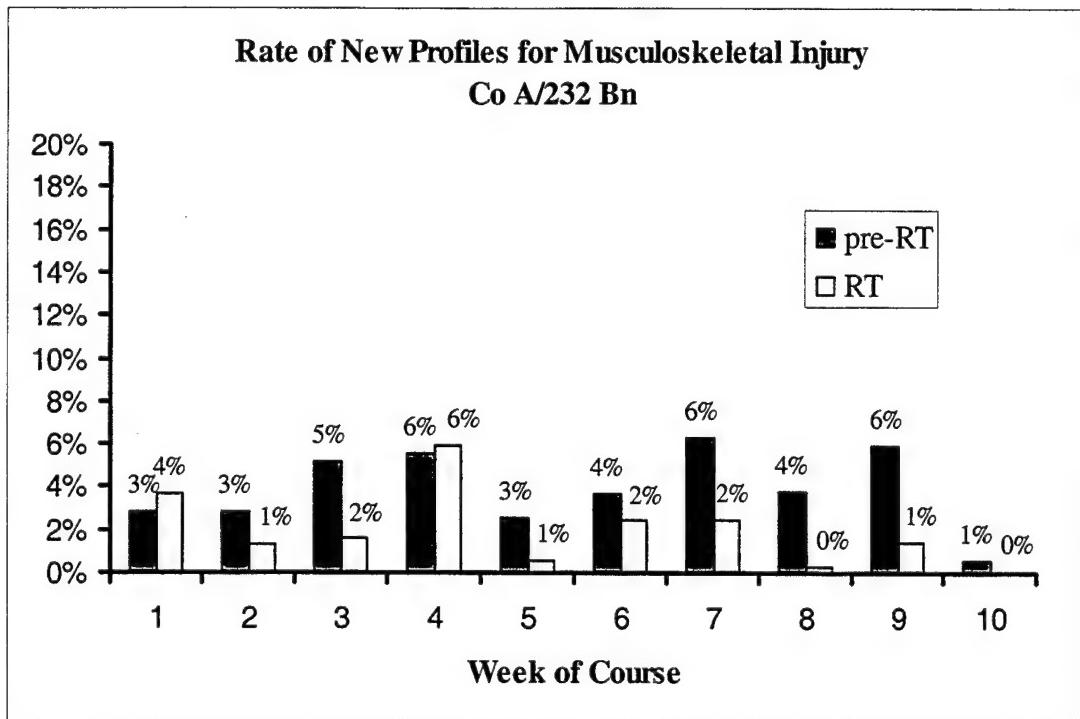


Figure 14

DISCUSSION

The goal of introducing a running template was to provide an appropriate level of challenge for soldiers (particularly those with low levels of physical fitness), so they would achieve the required performance standards without incurring unnecessary injuries. The running template was successful, as soldiers who used the template achieved the same level on performance measures as did soldiers who did not use the

template, but they had fewer clinic visits and limited duty profiles for musculoskeletal injuries.

In viewing performance data, it is important to recognize that more soldiers were available to participate in physical fitness testing, and that soldiers were performing to standards during the test. A larger percentage of soldiers in the RT group were available to take the diagnostic and record APFT (not on profile), and a larger percentage of the RT group was available to participate in both APFT administrations. Soldiers in the RT and pre-RT groups performed equally well on both APFT's administered during AIT; both in terms of pass rates and scores. In examining the soldiers who completed both the DAPFT and the RAPFT, three key findings were noted. First, the degree of improvement in scores from the diagnostic to the final test was greater in the low ability groups than it was in the high ability groups. This finding is not surprising, as training typically is most effective in those who need it most, that is, for those who have more room for improvement. The running template did not eliminate this classic effect. The fact that men in the high scoring group showed the same degree of improvement in both the pre-RT and RT programs indicates the running template was challenging enough for high-scoring men to be able to improve their performance as much as they would have had they been in the traditional (pre-RT) running program. The second key finding is that, in this subset of soldiers, although improvements in APFT scores between the diagnostic and record APFT were slightly greater for the pre-RT group, the difference in gains was not significant and both groups improved their scores. The running template was designed as a conservative approach, which should have allowed soldiers to improve

performance incrementally, using techniques to enhance performance without developing injuries. Even with this cautious approach, performance gains were essentially equal between the RT and pre-RT groups. The third key finding is that men improved slightly more than women, however both men and women improved. In summary, the running template resulted in a greater number of soldiers participating in the APFT administrations, without a compromise in performance. This outcome was particularly evident in the highest performers. A perception of the cadre was that beginning running training at AIT with a distance of 1.5 miles, which includes warm-up and cool-down, and building up to 2.5 miles over seven weeks would diminish final APFT performance. This perception was not validated, as performance achievements were the same in terms of APFT scores on all events, overall pass rates were similar, and more soldiers were available to take the APFT.

According to the surveillance data, there were fewer clinic visits for musculoskeletal injuries for the RT group, compared with the pre-RT group. Clinic visits for musculoskeletal visits decreased by 36%. Given 240 weeks of training per year (a conservative estimate that includes staggered two-week breaks in between classes), this reduction would equate to a savings of \$67,000 per year. This savings occurred in one AIT battalion and the intervention was conducted with student-soldiers only, not with permanent party soldiers. If 187th instituted and similar program with comparable results, the savings would be double (\$137, 000/year). It is also likely that similar outcomes would occur with implementation of a progressive running program at BCT sites, and among permanent party soldiers. If similar savings could be achieved at each of the

Army's BCT and AIT posts, the annual savings could easily exceed four million dollars annually. Again, this estimate does not include permanent party soldiers, especially those transitioning to their first duty station, who are also likely to gain from a similar training schedule.

The RT group experienced a lower rate of new profiles as measured by both end-of-cycle (EOC) review data compiled by the A Company, and by separately collected surveillance data. Given 240 training weeks per year, the savings would exceed 24,490 limited duty days per year for the battalion and 50,000 for Center Brigade. Similar results would be expected should a similar program be implemented at other training sites with potential reductions of over 1.5 million limited duty days annually.

Although MSI clinic visits during BCT have been reported to be considerably higher for women than for men, this outcome was not found to be the case for AIT at FSH. Henderson, et al. (2000) found new injury rates for AIT soldiers at FSH of 24% for men and 30% for women, while Rice, et al. (2001c) found new rates of 24% for both men and women over an 8-month period. Thus, the improvements for men are not due to greater numbers of injuries among the women. One possibility for the running template being more helpful in reducing profiles among men may be the fact that more men are in the faster running groups than women. In the pre-RT program, the running program was governed by time, while in the RT template mileage was crucial. Because the faster running group could cover a greater distance during the same amount of running time, and higher mileage has been equated with higher rates of injury (Jones, et al., 1993), it

may be that injuries and profiles experienced by men were related to higher mileage. Consequently, a running program that reduced their mileage might have also reduced clinic visits and profiles.

CONCLUSIONS

Traditional Army physical training programs, conducted during AIT, emphasize endurance running, rather than a balanced program of aerobic and anaerobic exercise, as well as coordination and mobility training. Adequate emphasis does not appear to be given to soldiers' level of fitness on arrival at AIT, nor on developing a progression from BCT to AIT, and from AIT to permanent duty stations. The results of this intervention analysis indicate that the running portion of physical training should be standardized according to well-known theories of exercise progression, integration of speed with distance, and prevention of overuse injuries through appropriate recovery.

It is also important for AIT commanders and cadre to remember their mission is to train soldiers to standards for graduation and provide the Army with a fit, healthy soldier, immediately ready to contribute to the gaining unit's mission. By elevating the expectations that soldiers will achieve scores greater than 60 points per event, cadre may be inadvertently contributing to injuries. Having an injury which results in limited duty time during AIT or very soon after a soldier reports to his or her permanent duty station results in lowered mission readiness for the unit and decreased morale for the soldier. Training soldiers beyond the standard required for AIT graduation is not the

responsibility of AIT cadre, it is the responsibility of the permanent duty station supervisors. In turn, supervisors at permanent duty stations need to develop a similar running program based on the capabilities of soldiers arriving from AIT and building their run speed and distance progressively to achieve mission essential standards.

Traditional training often pushed new soldiers to accomplish too much (distance), too soon (early in their training), too fast (speed), and did not take human factors (human capabilities and limitations) into account. This type of training, characterized as “survival of the fittest” is appropriate when the goal is to weed out people who are not already prepared to join an elite group. However, training according to a running template is appropriate when the goal is to give soldiers an opportunity to demonstrate and achieve their potential. Training of this type can be used to categorize soldiers who are ready now and those who will be ready with appropriate training. The use of the running template could be characterized as “living to train another day,” rather than “survival of the fittest.” The running template “conserves the fighting strength,” by providing soldiers with the opportunity to train, improve, and continue to progress through their military life cycle, with less likelihood of musculoskeletal injury.

The running template was successful, because it was a continuation of an battalion-wide injury prevention program, carefully developed over the year prior to the templates implementation. A solid base was developed which included intangibles such as developing a coordinated, trusting relationship between injury prevention officers and commanders, introducing a command climate that permitted changes in training

procedures, and having the sincere backing of the command structure from the Commanding General to company leadership level. Enforcing changes in the way the U.S. Army conducts physical training for running can reduce injuries, but having the right information and a conducive command climate are equally imperative.

Military training must be conducted in concert with the most recent information on physical abilities and limitations. This information changes constantly. For example, we no longer conduct running training or testing while wearing combat boots and formation running (using the same stride for each person) is being de-emphasized. Developing new training guidance is an iterative, rather than stagnant, process. Using the best information possible to take care of and train soldiers requires the coordinated effort of subject matter experts from multiple sources. Research must be conducted by the Medical Research and Materiel Command. Surveillance and analysis of new strategies should be carried out by the Center for Health Promotion and Preventive Medicine. The most recent information on physical training should be integrated into doctrine by the Physical Fitness School. Training and Doctrine Command must make certain the best information from the former three sources is included in military courses for both officers and enlisted to ensure concepts are integrated into training throughout the Army. The Brigade, Battalion, and Company level commands must be open to change, and embrace the changes that benefit their soldiers. They must hold each other accountable, not only for the effect training has on performance, but also the effect training has on mission readiness in terms of injuries and profiles.

Programs such as the running template tested at Ft. Sam Houston are direct demonstrations of Army values. It is being loyal to our fellow soldiers, treating them the way they should be treated (respect). It is doing what is right (integrity). It is time military soldiers returned to the adage of “taking care of our own”. We must challenge, even while we nurture. We must help new members of the organization to grow and achieve, and at the same time take measures to prevent physical and mental breakdown. Often, when a physician recommends a particularly frightening medical procedure, he or she will phrase their recommendation by saying “if you were my sister or brother, this is what I’d recommend”. It is time for us to use this approach when developing training. It is time to ask, “how would I train my sister and my brother so they could succeed and achieve in the Army?”

Reducing musculoskeletal injuries among soldiers, while maintaining or improving physical performance can be achieved with extraordinary savings in terms of money, manpower, and morale. The changes must be cultural, as well as practical, to achieve optimal results. We are said to be an “Army of One”, but we must be an Army of individual living by the creed “All for one, and one for all”.

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DEFINITIONS

Center Brigade – Center Brigade is part of the U.S. Army Medical Department Center and School (AMEDDC&S) and consists of the 232nd and 187th Battalions. These two Battalions are made up of soldiers who are students at the AMEDDC&S and are in the process of obtaining their military occupational specialty training, advanced specialty instruction, or for officers they may be enrolled in basic or advanced military training or one of three masters programs.

APPENDIX 1
RUNNING TEMPLATE

**RUNNING SCHEDULE
232ND MED BN**

Insure adequate time for warm-up and cool-down and perform IAW FM 21-20.

Maintain good form while running.

Run times are estimates. Slow or speed run based on group's ability.

WEEK 1

WEDNESDAY

Ability Groups (Based on 2 mile run time on final APFT at BCT) - Slow Continuous Run (SCR): Distance 1½ mile

This run is not intended to be challenging. It should be run at a pace that is about 2 minutes/mile slower than the 2-mile run pace.

The distance of 1½ mile includes a warm-up and cool-down period, run at an easy pace. An easy pace means no one in the group should have to make any effort to keep up. If anyone falls out at an easy pace, the pace is too fast.

12:00 – 14:00 Minute Group: Run for ¼ mile at a very easy pace, then gradually increase to about an 8 minute per mile pace for 1 mile, and then run ¼ mile at an easy pace to finish.

14:01 – 16:30 Minute Group: Run for ¼ mile at a very easy pace, then gradually increase to about a 9 minute per mile pace for 1 mile, and then run ¼ mile at an easy pace to finish.

16:31 – 19:30 Minute Group: Run for ¼ mile at a very easy pace, then gradually increase to about an 11 minute per mile pace for 1 mile, and then run ¼ mile at an easy pace to finish.

19:31 – 23:00 Minute Group: Run for ¼ mile at a very easy pace, then gradually increase to about a 12.5 minute per mile pace for 1 mile, and then run ¼ mile at an easy pace to finish.

FRIDAY

Ability Groups (Based on 2 mile run time on final BCT APFT) – Fast Continuous Run (FCR): Distance 1½ miles

This pace is intended to be more challenging than the SCR. It is generally run at a pace 30-40 seconds slower than the 2-mile run pace. If individuals in the group are

having trouble at this pace, slow the pace further so that all individuals can stay with the group. The distance of 1½ mile includes a warm-up and cool-down period.

12:00 – 14:00 Minute Group: Run for ½ mile at an easy pace, then gradually increase to about a 7.5 minute per mile pace for ¾ mile and then run ¼ mile at an easy pace to finish.

14:01 – 16:30 Minute Group: Run for ½ mile at an easy pace, then gradually increase to about an 8.5 minute per mile pace for ¾ mile and then run ¼ mile at an easy pace to finish.

16:31 – 19:30 Minute Group: Run for ½ mile at an easy pace, then gradually increase to about a 10 minute per mile pace for ¾ mile and then run ¼ mile at an easy pace to finish.

19:31 – 23:00 Minute Group: Run for ½ mile at an easy pace, then gradually increase to about a 12 minute per mile pace for ¾ mile and then run ¼ mile at an easy pace to finish.

SATURDAY

DO NOT RUN DURING PLATOON PT ON SATURDAY.

1.5-MILE FITNESS WALK IN PRT UNIFORM

WEEK 2

MONDAY

Ability Groups (Based on 2 mile run time on final BCT APFT) – FCR: Distance 1½ mile

12:00 – 14:00 Minute Group: Run for ½ mile at an easy pace, then gradually increase to about a 7.5 minute per mile pace for ¾ mile and then run ¼ mile at an easy pace to finish.

14:01 – 16:30 Minute Group: Run for ½ mile at an easy pace, then gradually increase to about an 8.5 minute per mile pace for ¾ mile and then run ¼ mile at an easy pace to finish.

16:31 – 19:30 Minute Group: Run for ½ mile at an easy pace, then gradually increase to about a 10 minute per mile pace for ¾ mile and then run ¼ mile at an easy pace to finish.

19:31 – 23:00 Minute Group: Run for ½ mile at an easy pace, then gradually increase to about a 12 minute per mile pace for ¾ mile and then run ¼ mile at an easy pace to finish.

WEDNESDAY (Easy run due to DAPFT on Friday)

Ability Groups (Based on 2 mile run time on final BCT APFT) - SCR: Distance 1½ mile

12:00 – 14:00 Minute Group: Run for $\frac{1}{4}$ mile at an easy pace, then gradually increase to about an 8 minute per mile pace for 1 mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

14:01 – 16:30 Minute Group: Run for $\frac{1}{4}$ mile at an easy pace, then gradually increase to about a 9 minute per mile pace for 1 mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

16:31 – 19:30 Minute Group: Run for $\frac{1}{4}$ mile at an easy pace, then gradually increase to about an 11 minute per mile pace for 1 mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

19:31 – 23:00 Minute Group: Run for $\frac{1}{4}$ mile at an easy pace, then gradually increase to about a 12.5 minute per mile pace for 1 mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

FRIDAY

DAPFT

SATURDAY

**DO NOT RUN OR FITNESS WALK DURING PLATOON PT ON SATURDAY.
EMPHASIZE CAREFUL STRETCHING**

WEEK 3

MONDAY

Ability Groups (Based on 2 mile run time on DAPFT) - FCR: Distance 1¾ miles

12:00 – 14:00 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increase to about a 7.5 minute per mile pace for 1 mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

14:01 – 16:30 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increase to about an 8.5 minute per mile pace for 1 mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

16:31 – 19:30 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increase to about a 10 minute per mile pace for 1 mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

19:31 – 23:00 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increase to about a 12 minute per mile pace for 1 mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

WEDNESDAY

Ability Groups (Based on 2 mile run time on DAPFT) - FCR: Distance $1\frac{3}{4}$ miles

12:00 – 14:00 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increase to about a 7.5 minute per mile pace for 1 mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

14:01 – 16:30 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increase to about an 8.5 minute per mile pace for 1 mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

16:31 – 19:30 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increase to about a 10 minute per mile pace for 1 mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

19:31 – 23:00 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increase to about a 12 minute per mile pace for 1 mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

FRIDAY

Ability Groups (Based on 2 mile run time on DAPFT) - FCR: Distance $1\frac{3}{4}$ miles

12:00 – 14:00 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increase to about a 7.5 minute per mile pace for 1 mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

14:01 – 16:30 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increase to about an 8.5 minute per mile pace for 1 mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

16:31 – 19:30 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increase to about a 9.5 minute per mile pace for 1 mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

19:31 – 23:00 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increase to about an 11.5 minute per mile pace for 1 mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

SATURDAY
TWO-MILE FITNESS WALK IN PRT UNIFORM

WEEK 4

MONDAY

Ability Groups (Based on 2 mile run time on DAPFT) - FCR: Distance 2.0 miles

12:00 – 14:00 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increased to about a 7.5 minute per mile pace for $1\frac{1}{4}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

14:01 – 16:30 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increased to about an 8.5 minute per mile pace for $1\frac{1}{4}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

16:31 – 19:30 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increased to about a 9.5 minute per mile pace for $1\frac{1}{4}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

19:31 – 23:00 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increased to about an 11.5 minute per mile pace for $1\frac{1}{4}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

WEDNESDAY

INTERVALS – After warm-up, run $\frac{1}{4}$ mile at an easy pace to further prepare for intervals. To begin the intervals, run $\frac{1}{4}$ mile at a pace that is 5-7 seconds faster, per quarter mile, than the 2 mile race pace. For example, if an individual ran 2 miles in 16 minutes they ran $\frac{1}{4}$ mile in about 2 minutes. Therefore, they should run the fast $\frac{1}{4}$ mile in about 1 minute and 53-55 seconds. Though soldiers will be in ability groups and, thus, running at similar speeds, they should not stay together as a group, this is an individual pace. Reform as a group and end the interval with $\frac{1}{4}$ mile at a very easy pace for recovery. This completes one interval. Repeat for a total of three intervals.

FRIDAY

Ability Groups (Based on 2 mile run time on DAPFT) - FCR: Distance 2.0 miles
(Speed increases slightly)

12:00 – 14:00 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increased to about a 7 minute per mile pace for $1\frac{1}{4}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

14:01 – 16:30 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increased to about an 8 minute per mile pace for $1\frac{1}{4}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

16:31 – 19:30 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increased to about a 9 minute per mile pace for $1\frac{1}{4}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

19:31 – 23:00 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increased to about an 11 minute per mile pace for $1\frac{1}{4}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

SATURDAY

2.5-MILE FITNESS WALK IN PRT UNIFORM

WEEK 5

MONDAY

Ability Groups (Based on 2 mile run time on DAPFT) - FCR: Distance 2.0 miles

12:00 – 14:00 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increased to about a 7 minute per mile pace for $1\frac{1}{4}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

14:01 – 16:30 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increased to about an 8 minute per mile pace for $1\frac{1}{4}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

16:31 – 19:30 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increased to about a 9 minute per mile pace for $1\frac{1}{4}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

19:31 – 23:00 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increased to about an 11 minute per mile pace for $1\frac{1}{4}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

WEDNESDAY

INTERVALS – After warm-up, run $\frac{1}{4}$ mile at an easy pace to further prepare for intervals. To begin the intervals, run $\frac{1}{4}$ mile at a pace that is 5-7 seconds faster, per quarter mile, than the 2 mile race pace. For example, if an individual ran 2 miles in 16 minutes they ran $\frac{1}{4}$ mile in about 2 minutes. Therefore, they should run the fast $\frac{1}{4}$ mile in

about 1 minute and 53-55 seconds. Though soldiers will be in ability groups and, thus, running at similar speeds, they should not stay together as a group, this is an individual pace. Reform as a group and end the interval with $\frac{1}{4}$ mile at a very easy pace for recovery. This completes one interval. Repeat for a total of three intervals.

FRIDAY

Ability Groups (Based on 2 mile run time on DAPFT) - FCR: Distance 2.0 miles

12:00 – 14:00 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increased to about a 7 minute per mile pace for $1\frac{1}{4}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

14:01 – 16:30 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increased to about an 8 minute per mile pace for $1\frac{1}{4}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

16:31 – 19:30 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increased to about a 8.5 minute per mile pace for $1\frac{1}{4}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

19:31 – 23:00 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increased to about an 10.5 minute per mile pace for $1\frac{1}{4}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

SATURDAY

2.5-MILE FITNESS WALK IN PRT UNIFORM

WEEK 6

MONDAY

Ability Groups (Based on 2 mile run time on DAPFT) - FCR: Distance $2\frac{1}{4}$ miles

12:00 – 14:00 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increase to about a 7 minute per mile pace for $1\frac{1}{2}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

14:01 – 16:30 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increase to about an 8 minute per mile pace for $1\frac{1}{2}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

16:31 – 19:30 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increase to about a 8.5 minute per mile pace for $1\frac{1}{2}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

19:31 – 23:00 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increase to about an 10.5 minute per mile pace for $1\frac{1}{2}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

WEDNESDAY

INTERVALS – After warm-up, run $\frac{1}{4}$ mile at an easy pace to further prepare for intervals. To begin the intervals, run $\frac{1}{4}$ mile at a pace that is 5-7 seconds faster, per quarter mile, than the 2 mile race pace. For example, if an individual ran 2 miles in 16 minutes they ran $\frac{1}{4}$ mile in about 2 minutes. Therefore, they should run the fast $\frac{1}{4}$ mile in about 1 minute and 53-55 seconds. Though soldiers will be in ability groups and, thus, running at similar speeds, they should not stay together as a group, this is an individual pace. Reform as a group and end the interval with $\frac{1}{4}$ mile at a very easy pace for recovery. This completes one interval. Repeat for a total of four intervals.

FRIDAY

Ability Groups (Based on 2 mile run time on DAPFT) - FCR: Distance $2\frac{1}{4}$ miles

12:00 – 14:00 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increase to about a 7 minute per mile pace for $1\frac{1}{2}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

14:01 – 16:30 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increase to about a 7.5 minute per mile pace for $1\frac{1}{2}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

16:31 – 19:30 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increase to about an 8 minute per mile pace for $1\frac{1}{2}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

19:31 – 23:00 Minute Group: Run for $\frac{1}{2}$ mile at an easy pace, then gradually increase to about a 10 minute per mile pace for $1\frac{1}{2}$ mile and then run $\frac{1}{4}$ mile at an easy pace to finish.

SATURDAY 2.5-MILE FITNESS WALK IN PRT UNIFORM

WEEK 7

MONDAY

Ability Groups (Based on 2 mile run time on DAPFT) - FCR: Distance 2½ miles

12:00 – 14:00 Minute Group: Run for $\frac{1}{4}$ mile at an easy pace, then gradually increase to about a 6.5 minute per mile pace for 2 miles, and then run $\frac{1}{4}$ mile at an easy pace to finish.

14:01 – 16:30 Minute Group: Run for $\frac{1}{4}$ mile at an easy pace, then gradually increase to about a 7.5 minute per mile pace for 2 miles, and then run $\frac{1}{4}$ mile at an easy pace to finish.

16:31 – 19:30 Minute Group: Run for $\frac{1}{4}$ mile at an easy pace, then gradually increase to about an 8 minute per mile pace for 2 miles, and then run $\frac{1}{4}$ mile at an easy pace to finish.

19:31 – 23:00 Minute Group: Run for $\frac{1}{4}$ mile at an easy pace, then gradually increase to about a 10 minute per mile pace for 2 miles, and then run $\frac{1}{4}$ mile at an easy pace to finish.

WEDNESDAY

INTERVALS – After warm-up, run $\frac{1}{4}$ mile at an easy pace to further prepare for intervals. To begin the intervals, run $\frac{1}{4}$ mile at a pace that is 5-7 seconds faster, per quarter mile, than the 2 mile race pace. For example, if an individual ran 2 miles in 16 minutes they ran $\frac{1}{4}$ mile in about 2 minutes. Therefore, they should run the fast $\frac{1}{4}$ mile in about 1 minute and 53-55 seconds. Though soldiers will be in ability groups and, thus, running at similar speeds, they should not stay together as a group, this is an individual pace. Reform as a group and end the interval with $\frac{1}{4}$ mile at a very easy pace for recovery. This completes one interval. Repeat for a total of four intervals.

FRIDAY

Ability Groups (Based on 2 mile run time on DAPFT) - FCR: Distance 2½ miles

12:00 – 14:00 Minute Group: Run for $\frac{1}{4}$ mile at an easy pace, then gradually increase to about a 6.5 minute per mile pace for 2 miles, and then run $\frac{1}{4}$ mile at an easy pace to finish.

14:01 – 16:30 Minute Group: Run for $\frac{1}{4}$ mile at an easy pace, then gradually increase to about a 7.5 minute per mile pace for 2 miles, and then run $\frac{1}{4}$ mile at an easy pace to finish.

16:31 – 19:30 Minute Group: Run for $\frac{1}{4}$ mile at an easy pace, then gradually increase to about an 8 minute per mile pace for 2 miles, and then run $\frac{1}{4}$ mile at an easy pace to finish.

19:31 – 23:00 Minute Group: Run for $\frac{1}{4}$ mile at an easy pace, then gradually increase to about a 9 minute per mile pace for 2 miles, and then run $\frac{1}{4}$ mile at an easy pace to finish.

SATURDAY
2-MILE FITNESS WALK IN PRT UNIFORM

WEEK 8

MONDAY

Ability Groups (Based on 2 mile run time on DAPFT) - FCR: Distance 2 $\frac{1}{2}$ miles

12:00 – 14:00 Minute Group: Run for $\frac{1}{4}$ mile at an easy pace, then gradually increase to about a 6.5 minute per mile pace for 2 miles, and then run $\frac{1}{4}$ mile at an easy pace to finish.

14:01 – 16:30 Minute Group: Run for $\frac{1}{4}$ mile at an easy pace, then gradually increase to about a 7.5 minute per mile pace for 2 miles, and then run $\frac{1}{4}$ mile at an easy pace to finish.

16:31 – 19:30 Minute Group: Run for $\frac{1}{4}$ mile at an easy pace, then gradually increase to about an 8 minute per mile pace for 2 miles, and then run $\frac{1}{4}$ mile at an easy pace to finish.

19:31 – 23:00 Minute Group: Run for $\frac{1}{4}$ mile at an easy pace, then gradually increase to about a 9 minute per mile pace for 2 miles, and then run $\frac{1}{4}$ mile at an easy pace to finish.

WEDNESDAY

Ability Groups (Based on 2 mile run time on DAPFT) - SCR: Distance 1 $\frac{1}{2}$ miles (Easy run due to RAPFT on Friday)

12:00 – 14:00 Minute Group: Run for $\frac{1}{4}$ mile at an easy pace, then run 1 mile at about an 8 minute per mile pace, and then run $\frac{1}{4}$ mile at an easy pace to finish.

14:01 – 16:30 Minute Group: Run for $\frac{1}{4}$ mile at an easy pace, then run 1 mile at about a 9 minute per mile pace, and then run $\frac{1}{4}$ mile at an easy pace to finish.

16:31 – 19:30 Minute Group: Run for $\frac{1}{4}$ mile at an easy pace, then run 1 mile at about an 11 minute per mile pace, and then run $\frac{1}{4}$ mile at an easy pace to finish.

19:31 – 23:00 Minute Group: Run for $\frac{1}{4}$ mile at an easy pace, then run 1 mile at about a 12 minute per mile pace, and then run $\frac{1}{4}$ mile at an easy pace to finish.

FRIDAY

RAPFT